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8 February 1957

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MEMORANDUM FOR: THE RECORD

SUBJECT : RCA UMR-1 Radio Transmitter-Receiver, P-79C

REFERENCE : (a) Memo for Record dtd 6 August 1956  
(b) Memo for Record dtd 14 December 1956

1. A meeting was held in the RCA Washington office on 7 February 1957 with the following in attendance:

Mr. Arthur E. Dunn  
Mr. Steve Heller

RCA, Washington Representative  
RCA Defense Products, Engineering  
Camden  
TBS/APD

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2. Mr. Heller exhibited and demonstrated a prototype of the UMR-1 receiver-transmitter modified for body concealment. Concealment was reasonably good under an ordinary suit jacket, and Mr. Heller wore the apparatus without attracting my attention when we first met. The equipment is as described in reference (b) except for the following:

a. The antenna is a length of wire dropped down the trouser leg. Heller stated tests made in an open field indicated this was better than any other arrangement he could devise and just about on a par with the vertical whip used on the standard UMR-1.

b. The microphone and loudspeaker have been combined. A hearing-aid transducer drives an exponential horn which is curved so that with the driven end just forward of the armpit the mouth of the horn is on top of the shoulder and directly under the ear.

3. The horn with hearing-aid driver is a less efficient transducer than the larger Shure microphone-speaker used on the commercial units. Additional amplifying stages have been added to the transmitter circuit to offset the lower efficiency and provide pickup from a greater distance. As a result the modified transmitter provides a more heavily modulated signal than the commercial type. Mr. Heller was concerned about the lower acoustic output on receive resulting from use of the horn, but to me it appeared adequate; and I told him to leave the output circuits as in the prototype.

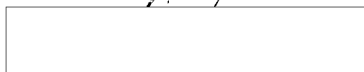
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4. There is no volume control on the receiver. For missions involving transmission only the speaker may be silenced by plugging it into a different jack from the one used for transmission and reception. Heller agreed to supply in the instruction literature information on reducing the power output by a resistor change; this may be useful on missions where reception is required and the normal level might attract attention.

5. It is expected some of the modified sets will be delivered during March.

6. I learned that the description of the circuit which I set down in reference (a) is not correct. The equipment uses two sub-miniature tubes; one as the transmitter oscillator and one as a "modulator" (I take exception to this use of the word). The modulator is the last of a chain of audio amplifiers and drives the nonlinear coil described in reference (a), which is where the frequency modulation really takes place. The bias on the modulator tube is adjusted by the AFC circuit to hold the mean frequency constant.



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**Distribution:**

- 1 - RCA File
- 1 - P-79C
- 1 - Chrono

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